INTERNATIONAL SEARCH REPORT

International application No.
PCT/US07/81260

A. CLASSIFICATION OF SUBJECT MATTER
IPC: G06F 19/00(2006.01);G06G 7/58(2006.01)

USPC: 702/19,27;703/11
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 702/19,27; 703/11

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
USPTO Internal (EAST); RSCB Protein Databank; DialogOne (Biosci, Medicine, Medline, Caplus)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	McKluskey et al. The Inhibition of Protein Phosphatases 1 and 2A: A New Target for Rational Anti-Cancer Drug Design? Anti-Cancer Drug Design, 2001, Vol. 16, pp. 291-303. See p. 298, 1st column, Docking Studies; also see p. 294, 1st column, 1st two paragraphs.	1-17
X	Sakoff & McCluskey, Protein Phosphatase Inhibition: Structure Based Design. Towards New Therapeutic Agents. Current Pharmaceutical Design, 2004, Vol. 10, pp. 1139-1159. See entire article, specifically, p. 1143, Table 1; Sections 3.1.1-3.1.6 and Section 3.3, specifically 3.3.6.	1-17
T	Cho & Xu, Crystal Structure of a Protein Phosphatase 2A Heterotrimeric Holoenzyme, Nature, E-publication: 01 November 2006, Vol. 445, pp. 53-57. See entire article.	1-17
T	Xu et al. Structure of the Protein Phosphatase 2A Holoenzyme, December 2006, Vol. 127, pp. 1239-1251. See entire article.	1-17

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 August 2008 (12.08.2008)	11 SEP 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer SUZANNE M. NOAKES Telephone No. 571-272-1600

Form PCT/ISA/210 (second sheet) (April 2007)

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PCT/US07/81260

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Groves et al. The Structure of the Protein Phosphatase 2A PR65/A Subunit Reveals the Conformation of Its 15 Tandemly Repeated HEAT Motifs. Cell, 1999, Vol. 96, pp.99-110. See entire article.	1-17
A	Boudreau et al. The use of okadaic acid to elucidate the intracellular role(s) of protein phosphatase 2A: Lessons from the mast cell model system. International Immunopharmacology, September 2005, Vol. 5, No. 10, pp. 1507-1518. See entire article.	1-17

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Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of any additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-17

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-17, drawn to protein phosphatase 2A (PP2A) binding compounds which have a three-dimensional structure corresponding to an atomic model of PP2A that has okadaic acid or microsystin-LR bound thereto.

Group II, claim(s) 18-25, drawn to a method of preparing a protein phosphatase 2A core binding compound by performing *in silico* rationale drug design methods and synthesizing the identified compounds.

Group III, claim(s) 26-28, drawn to a pharmaceutical composition comprising an effective amount of a compound.

Group IV, claim(s) 29-34, drawn to a method of identifying a carcinogen by determining the atomic coordinates of a compound and applying three-dimensional molecular modeling algorithms to the compound and PP2A to electronically screen the compounds.

The inventions listed as Groups I-IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: McCluskey et al. (Anti-Cancer Drug Design, 2001, 16:291-303) teach a method of identifying a new class of protein phosphatase 2A inhibitor compounds by rationally designing said compounds by using the three-dimensional atomic coordinates of a modeled PP2A structure. The method utilizes the three-dimensional molecular modeling algorithm/program Cerius2-LigandFit (see p. 298, 1st column, Docking Studies; also seep. 294, 1st column, 1st two paragraphs) to ascertain the exact binding mode of candidate compounds numbers 24 and 25, which are synthesized compounds. Thus, both the compounds and the method minimally anticipate claims 1 and 18. It is noted that the former is anticipated as the compound is a product-by-process compound wherein said process does not necessarily impart novelty to said compound.

Therefore, the technical feature linking the inventions of Groups I-IV does not constitute a special technical feature as defined by PCT Rule 13.2, as it does not differentiate the claimed subject matter as a whole over the prior art. Since according to PCT Rule 13.2 the presence of such a common or corresponding special technical feature is an absolute prerequisite for unity to be established, and given that there does not appear to be any other technical feature common to the claimed subject matter as a whole which might be able to fulfill this role, the currently claimed subject matter lacks unity of invention according to PCT Rule 13.1.